

REMARKS

Applicants wish to thank Examiner Tam Nguyen for the courtesy extended during a personal interview on June 11, 2003 at the U.S. Patent and Trademark Office, with the undersigned attorney for Applicants. Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claim 1 has been amended. Claims 12-15 have been withdrawn from consideration. Claims 1-11 are now pending for the Examiner's consideration.

Claim 1 has been amended to more particularly define the invention. Particularly, the step of separating an olefin product stream and an oxygenated hydrocarbon containing stream from the compressed vapor stream, in claim 1, occurs by contacting the compressed vapor stream with a wash medium selected from the group comprising water and/or methanol. Support for this amendment is found on in the second full paragraph on page 17.

Thus, these changes add no new matter, and should be entered at this time. For the reasons that follow, Applicants believe all claims are in condition for allowance.

Restriction Requirement

Applicants confirm that claims 12-15 have been elected with traverse and have been withdrawn in the amendment above.

Drawings

The drawing is objected to because it does not have a reference number 24. The drawing is amended to add reference number 24 corresponding to line 24.

Support for this amendment is found on page 21 in the first full paragraph, which is reproduced below for the Examiner's convenience:

"The water containing stream is sent to a separator 20, preferably a distillation column. Separator 20 is used to separate oxygenated hydrocarbon from the water containing stream. The oxygenated hydrocarbon is removed through a line 22, with the remaining water being removed through a line 24." Specification @ page 21, first full paragraph.

The Figure as filed shows a separator 20 with an inlet and two outlets. One outlet corresponds to line 22. The other outlet corresponds to a line without a reference numeral. However, the figure clearly indicates that the content of the line includes water. Viewing the drawing with the above paragraph, a person of ordinary skill in the art would readily recognize that this unlabeled line corresponds to the text "line 24." Thus, no new matter is added by this amendment.

Rejection Under 35 USC 103

The Examiner has rejected claims 1-11 as being unpatentable over U.S. Patent No. 4,506,106 (Hsia) in view of U.S. Patent No. 6, 137,022 (Kuechler). To establish a prima facie case of obviousness, the Examiner must show that each and every element of a claim is found in the relevant prior art. Applicants assert that the Examiner has not established a prima facie case of obviousness over claim 1, as amended, as well as dependent claims 2-11.

Claim 1 recites a process for separating oxygenated hydrocarbon from an olefin composition. The process comprises contacting an oxygenate with a molecular sieve catalyst to form an olefin composition. The olefin composition comprises olefin, water and oxygenated hydrocarbon. The olefin composition is cooled to form a liquid water containing stream and an olefin containing vapor stream. The water-containing stream comprises at least 1 wt % oxygenated hydrocarbon. The water-containing stream is separated from the vapor stream.

The vapor stream is compressed. An olefin product stream and an oxygenated hydrocarbon containing stream is separated from the compressed vapor stream by contacting the compressed vapor stream with a wash medium selected from the group comprising water and/or methanol. The water-containing stream is combined with the oxygenated hydrocarbon-containing stream. The oxygenated hydrocarbon product is recovered from the combined water containing stream and liquid oxygenated hydrocarbon containing stream.

Hsia teaches a process for converting methanol to olefins in a series of reactor beds. Following the reaction there is a step of cooling. The cooled liquid is separated into a liquid hydrocarbon stream, a light hydrocarbon stream and a water/methanol stream. Alternatively, the light hydrocarbon stream (containing DME) is sent to a sorption/fractionation step. The sorption agent is a gasoline recycle stream.

Hsia does not teach separating an olefin product stream and an oxygenated hydrocarbon-containing stream from the compressed vapor stream by contacting the compressed vapor stream with a wash medium selected from the group comprising water and/or methanol. Kuechler does not teach the use of a wash medium selected from the group comprising water and/or methanol.

The Examiner has not made a prima facie case of obviousness with respect to claim 1. Similarly, claims 2-11 contain all of the elements of claim 1. Examiner has not made a prima facie case of obviousness with respect to these cases.

Use of methanol and/or water as a wash medium has advantages over the use of a gasoline recycle stream. Water is plentiful in an oxygenate to olefin reaction system. Methanol is plentiful in any methanol to olefin process. Gasoline is only plentiful in an oxygenate to olefin process that dimerizes or oligomerizes some of the olefin product stream to gasoline range hydrocarbons. Thus, in many methanol to olefin processes, there is not sufficient amounts of gasoline for efficient use as a sorption medium.

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Accordingly, the presently pending claims 1-11 are not obvious and are patentable. Withdrawal of this rejection is respectfully requested.

Applicants invite the Examiner to telephone the undersigned attorney if there are any issues outstanding which have not been presented to the Examiner's satisfaction.

Respectfully submitted,

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Date



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APPENDIX A
SPECIFICATION MARKED-UP TO SHOW CHANGES MADE
CLAIMS MARKED-UP TO SHOW CHANGES MADE

1. (Amended) A process for separating oxygenated hydrocarbon from an olefin composition comprising:

contacting an oxygenate with a molecular sieve catalyst to form an olefin composition, wherein the olefin composition comprises olefin, water and oxygenated hydrocarbon;

cooling the olefin composition to form a liquid water containing stream and an olefin containing vapor stream, wherein the water containing stream comprises at least 1 wt % oxygenated hydrocarbon;

separating the water containing stream from the vapor stream;

compressing the vapor stream;

separating an olefin product stream and an oxygenated hydrocarbon containing stream from the compressed vapor stream by contacting the compressed vapor stream with a wash medium selected from the group comprising water and/or methanol;

combining the water containing stream and the oxygenated hydrocarbon containing stream; and

recovering oxygenated hydrocarbon product from the combined water containing stream and liquid oxygenated hydrocarbon containing stream.